ABSTRACT:

This paper deals with analytical modelling of the classical tensile test which is still considered as one of the main experimental procedures to determine the flow curve of elasto-plastic materials. Accurate numerical simulation of the process allowed us to recognise the errors introduced by the well-known classical formulae which are used to correct the experimental data under the stage of neck formation. Modifications to the analytical models make it possible to eliminate some of the questionable classical assumptions and to construct a new formula. Comparison of the new results with the well-known classical ones indicates significant improvement.